

ABSTRACT OF THE DISCLOSURE

The invention includes a method of forming a transistor device. A semiconductor substrate is provided. The substrate has a silicon-comprising surface. The silicon-comprising surface is exposed to activated nitrogen for a time of at least about 20 seconds to convert the silicon-comprising surface to a material comprising silicon and nitrogen. The activated nitrogen is formed by exposing a nitrogen-containing precursor to a plasma generated at a power of at least about 750 watts. A transistor gate structure is formed over the material comprising silicon and nitrogen. The transistor gate structure defines a channel region underlying it. The material comprising silicon and nitrogen separates the transistor gate structure from the channel region. A pair of source/drain regions are formed which are separated from one another by the channel region.

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